A novel targeted drug delivery and release system has been developed and successfully tested in a xenograft tumor model. The system consists of nanoparticles equipped with tumor targeting peptides. These particles are designed to carry drugs that can be released by locally applying a magnetic field. First proof-of-concept in vivo studies for a tumor targeting nanosystem have been successful.

A patient derived xenograft tumor model in the mouse was used. Initial results show no side effects (figure 2, 3) but a significant inhibition of tumor growth (figure 1). Furthermore the delivery and release system is more efficient than the standard therapy with the non-encapsulated drug.

This system was developed by a multidisciplinary group of partners including AIN (Spain), EPO Berlin (Germany), Idifarma (Spain), and IZI (Germany). This consortium comprises of partners with expertise in the pharmaceutical and biotechnological field and capacities to develop drug formulations, pilot-scale GMP manufacturing, DMPK and preclinical studies.

We are presently looking for industrial collaborators to further develop the system and as future licensing partners.

**PROOF OF CONCEPT: INHIBITION OF TUMOR GROWTH**

Figure 1: Xenograft tumor model treated with nanocarrier for targeted drug delivery and triggered drug release.

Renal PDX REN11619 bearing mice were treated at day 0, 2 and 4 after stratification with the nanocarrier, followed by magnet field exposure 2 h post treatment.

#: significantly different to control; *
*: significantly different to SOC,
+: significantly different to Exposure.

Mann-Whitney nonparametric U-test, p<0.05.

SOC = Standard operation protocol NC = Nanocarrier

**NO SIDE EFFECTS DUE TO TARGETED DRUG DELIVERY AND RELEASE**

Figure 2: Impact of treatment on body weight and blood composition

(A) REN11619 bearing mice were treated at day 0, 2 and 4 after stratification and body weight was measured at indicated days. (B) Blood samples were taken at day 36 and analyzed for composition. Treatments: (A) Saline, (B) SOC, (C) Exposure, (D) NC+Exposure, (F) SOC + Exposure.